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- TOFU

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IN - KAIMI N; KONO K; TAKITA K; YAMAGUCHI S; KAIMAI N

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PA - (TOFU ) TONEN CHEM CORP

- (TOFU ) TONEN KAGAKU KK

PN - DE69724513E E 20031009 DW200374 B32B5/24 000pp

- EP0811479 A2 19971210 DW199803 B32B5/24 Eng 016pp

- JP9326250 A 19971216 DW199809 H01M2/16 006pp

- JP10044348 A 19980217 DW199817 B32B27/32 007pp

- CA2206940 A 19971204 DW199916 B01D69/12 000pp

- KR98018123 A 19980605 DW199922 B01D69/12 000pp

- US5922492 A 19990713 DW199934 H01M2/16 000pp

- EP0811479 B1 20030903 DW200360 B32B5/24 Eng 000pp

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XA - C1998-007799

XIC - B01D-069/12 ; B23B-005/26 ; B32B-005/24 ; B32B-005/32 ; B32B-027/12 ;  
B32B-027/32 ; C08J-005/22 ; C08L-023/06 ; C08L-023/02 ; D04H-013/00 ;  
H01M-002/14 ; H01M-002/16

XP - N1998-015860

AB - EP-811479 A microporous polyolefin composite membrane comprises a microporous polyolefin membrane having a polyolefin nonwoven fabric laminated on at least one surface. The composite membrane has a thickness of 25-200  $\mu\text{m}$ , a porosity of 30-70%, an air permeability of 100-2,000 sec./100 cc and a surface opening area ratio of 50-90% on at least one of its outer surfaces. The microporous polyolefin membrane comprises a matrix polyolefin of weight average molecular weight (Mw) 50,000 or more, or a polyolefin mixture containing a polyolefin of this Mw, and having a porosity of 30-95%, an air permeability as above, an average open pore diameter of 0.001-1  $\mu\text{m}$  and a tensile strength at break of 500 kg/cm<sup>2</sup> or more. Also claimed is a method for producing a microporous polyolefin composite membrane as above.

- USE - Used as a battery separator (claimed) for non-aqueous batteries, e.g. lithium batteries.

- ADVANTAGE - The membrane has excellent permeability and mechanical strength, and a high safety factor as it will shut down at a low temperature if an unusually large amount of heat is generated due to a short circuit of the battery. The nonwoven fabric give it a high meltdown temperature. The membrane has a large pore opening to reduce the contact area between the membrane and the surface of electrodes

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B9999 B4875 B4853 B4740 ; B9999 B5276-R ; B9999 B4091-R B3838 B3747 ;  
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- [002] 018 ; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82 ;  
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- [004] 018 ; A999 A497 A486 ;  
- [005] 018 ; G3474 D01 D02 D50 ; A999 A395 ; S9999 S1376 ;